

[0051]

What is claimed is:

1. An elastomer composite comprising an elastomer and particulate filler dispersed in the elastomer, the particulate filler comprising at least one carbon black having structure and surface area values meeting the equation $CDBP \leq (BET \div 2.9)$.
2. An elastomer composite in accordance with claim 1 comprising at least 60 phr of the particulate filler.
3. An elastomer composite in accordance with claim 1 comprising at least 60 phr of the carbon black meeting the equation $CDBP \leq (BET \div 2.9)$.
4. An elastomer composite in accordance with claim 1 wherein the particulate filler further comprises at least one additional filler material having structure and surface area values not meeting the equation $CDBP \leq (BET \div 2.9)$.
5. An elastomer composite in accordance with claim 1 wherein the elastomer is selected from natural rubber, a homopolymer, copolymer or terpolymer of butadiene, styrene, isoprene, isobutylene, 2,3-dialkyl-1,3-butadiene where the alkyl group is C1 to C3 alkyl, acrylonitrile, ethylene or propylene.
6. An elastomer composite in accordance with claim 1 wherein the elastomer comprises natural rubber.
7. An elastomer composite in accordance with claim 1 further comprising at least one additive selected from antiozonants, antioxidants, plasticizers, processing aids, resins, flame retardants, extender oils, lubricants, and combinations thereof.
8. An elastomer composite in accordance with claim 1 wherein the elastomer composite has a tear strength, as measured by test method ASTM-D624 using Die C, of at least about 160 N/mm.

9. An elastomer composite comprising a general purpose rubber and particulate filler dispersed in the general purpose rubber, wherein the particulate filler comprises an amount of at least one carbon black effective in said general purpose rubber to achieve tear strength, as measured by test method ASTM-D624 using Die C, of at least about 160 N/mm.

10. An elastomer composite comprising an elastomer and particulate filler dispersed in the elastomer, the elastomer composite having

Shore A hardness, measured in accordance with test method ASTM-D1415, greater than about 65;

tensile strength, measured in accordance with test method ASTM-D412, greater than 30 megapascals; and

elongation at break, measured in accordance with test method ASTM-D412, of at least about 600 %;

wherein the particulate filler comprises carbon black having structure and surface area values meeting the equation $CDBP \leq (BET \div 2.9)$.

11. An elastomer composite in accordance with claim 10 having tear strength, as measured by test method ASTM D-624, of at least 160 N/mm.

12. An elastomer composite comprising a general purpose rubber and particulate filler dispersed in the general purpose rubber, wherein the particulate filler comprises an amount of at least one carbon black effective in said general purpose rubber to achieve:

Shore A hardness, measured in accordance with test method ASTM-D1415, greater than about 65;

tensile strength, measured in accordance with test method ASTM-D412, greater than 30 megapascals; and

elongation at break, measured in accordance with test method ASTM-D412, of at least about 600 %.

13. An elastomer composite in accordance with claim 12 wherein said carbon black has structure and surface area values meeting the equation $CDBP \leq (BET \div 2.9)$.

14. An elastomer composite in accordance with claim 12 wherein said elastomer has tear strength, as measured by test method ASTM-D624 using Die C, of at least about 160 N/mm.

15. An elastomer composite in accordance with claim 1 wherein the particulate filler comprises at least one carbon black having structure and surface area values meeting the equation $CDBP \leq (BET \div 2.9) - X$, wherein X is about 5.

16. An elastomer composite in accordance with claim 1 wherein the particulate filler comprises at least one carbon black having structure and surface area values meeting the equation $CDBP \leq (BET \div 2.9) - X$, wherein X is about 10.

17. An elastomer blend comprising an elastomer composite blended with at least one elastomer material, the elastomer composite comprising a first elastomer and particulate filler dispersed in the first elastomer, the particulate filler comprising at least one carbon black having structure and surface area values meeting the equation $CDBP \leq (BET \div 2.9) - X$.

18. An elastomer blend in accordance with claim 17 wherein the elastomer material comprises elastomer different from the first elastomer.

19. An elastomer blend in accordance with claim 17 wherein the elastomer composite, before blending, has tear strength, as measured by test method ASTM-D624 using Die C, of at least about 160 N/mm.

20. An elastomer blend in accordance with claim 17 wherein the elastomer composite, before blending, has

Shore A hardness, measured in accordance with test method ASTM-D1415, greater than about 65;

tensile strength, measured in accordance with test method ASTM-D412, greater than 30 megapascals; and

elongation at break, measured in accordance with test method ASTM-D412, of at least about 600%.

21. A method of producing an elastomer composite comprising an elastomer and particulate filler dispersed in the elastomer, the method comprising:

feeding a continuous flow of first fluid comprising elastomer latex to a mixing zone; and

feeding a continuous flow of second fluid comprising the particulate filler under pressure to the mixing zone to form a mixture, the mixing of the first fluid and the second fluid within the mixing zone being sufficiently energetic to substantially completely coagulate the elastomer latex with the particulate filler;

the particulate filler comprising at least one carbon black having structure and surface area values meeting the equation $CDBP \leq (BET \div 2.9) \cdot X$.

22. The method of claim 21 wherein the elastomer composite has tear strength, as measured by test method ASTM-D624 using Die C, of at least 160 N/mm.

23. The method of claim 21 further comprising blending the elastomer composite with an elastomer material to form an elastomer blend.

24. The method of claim 23 wherein blending the elastomer composite with the elastomer material comprises dry mixing the elastomer composite with the elastomer material.

25. The method of claim 23 wherein the elastomer material comprises additional filler.

26. The method of claim 21 further comprising blending the elastomer composite with additional filler.

27. The method of claim 21 wherein the elastomer composite has tear strength, as measured by test method ASTM-D624 using Die C, of at least 160 N/mm.

28. The method of claim 21 wherein the elastomer composite has
Shore A hardness, as measured by test method ASTM D1415, of at least 65,
tensile strength, as measured by test method ASTM D412, of at least 30
megapascals, and
elongation, as measured by test method ASTM D412, of at least 600 %.

29. An elastomer composite in accordance with claim 1, wherein the particulate filler comprises at least one carbon black having a CDBP value of about 43 to 45 mL/100g and a BET value of about 260 to 264 m²/g.

30. An elastomer composite in accordance with claim 29 wherein the at least one carbon black is present at a loading level from about 50 to 110 phr based upon the weight of the elastomer in the elastomer composite.